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Zoological Illustrations,

OR

ORIGINAL FIGURES AND DESCRIPTIONS

OF

NEW, RARE, OR INTERESTING

ANIMALS,

SELECTED CHIEFLY FROM THE CLASSES OF

Ornithology, Entomology, and Conchology,

AND ARRANGED ACCORDING TO THEIR NATURAL AFFINITIES.

BY

WM. SWAINSON, ESQ., F. R. S., F. L. S.

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VOL III.

SECOND SERIES.

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TO

WILLIAM JOHN BURCHELL, Esq.,

THE AFRICAN TRAVELLER,

Whose discoveries have benefited every branch of natural science; whose knowledge is equal to their full elucidation; and whose talents,—unfostered by, and unknown to, his own Government,—are held in respect and estimation throughout the civilized world.

THIS THIRD VOLUME OF

Zoological Illustrations,

IS DEDICATED;

BY HIS ATTACHED AND AFFECTIONATE FRIEND,

THE AUTHOR.

PREFACE.

In closing our second series of Zoological Illustrations, we cannot but express gratification at the terms in which they have been alluded to at home and abroad. It is hardly necessary to state that the scientific interest of the subjects described, and the attention bestowed upon the plates, have progressively increased, as the work has approached its termination. The contents of this series may now be divided into three equal portions, so that the Birds, the Insects, and the Shells, will form distinct and uniform volumes, unconnected, except in the general title, with each other.

As complete sets of the first series have now become very scarce, new editions of the deficient parts are in rapid progress; and the whole will then be divided, as above, into three portions.

It is but justice to Mr. G. Bayfield,* that the author should here express his satisfaction at the skill and care with which he has executed the colouring of the plates, both of this work, and of every other in which his services have been engaged.

In answer to several correspondents who have requested to know what book we can recommend, as giving a general and popular introduction to the *natural* arrangement of animals, we are obliged to confess that amid countless volumes of anecdotes, compilations, and methods, no such work has ever been undertaken. With the intention of supplying this deficiency, we have devoted the greatest portion of the last five years to an Encyclopedia of Zoology; wherein the science will be placed under a new and striking ight; no less instructive to the general reader, than interesting to the learned. In another year, we trust this work will be before the public. To *that* volume we must consequently refer the readers of *this*, whenever they wish to understand the full scope and influence of those novelties in natural arrangment which are but slightly glanced at in the following descriptions.

As more than usual care is necessary in the binding of these volumes, it may be as well to mention that we have particularly instructed Mr. Betts, of Compton Street, Brunswick Square, on this subject.

Tittenhanger Green,
4th March, 1833.

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* 9, Trafalgar Street, Walworth.

TRICHOGLOSSUS

Swainson's Green. 10m

TRICHOGLOSSUS Swainsoni.

Swainson's, or Blue-bellied Lory.

Family Psittacidæ. Sub-family Psittacinæ. Genus Lorius. *Swains.*

SUB-GENERIC CHARACTER.

Bill obsoletely notched; *Tail* lengthened, cuneated, narrowed from the base, the two middle tail feathers conspicuously longest. *Nob.*

Type Lorius. (Trichoglossus.) Swainsoni. J. and S.

SPECIFIC CHARACTER.

Green: head, middle of the body and bands on the sides, azure-blue,; throat, breast, and flanks, orange-crimson.

Trichoglossus Swainsoni. *Jardine and Selby. Ill. of Orn. pl. iii.*
Blue bellied Parrakeet. *Brown's Ill. pl.* 7. *White's Voyage, pl.* 4. *p.* 140.
Le Perruche à tête bleue, male. *Le Vaill. Perr.* 1. *pl.* 24. *fig. pulcherima.*
Perruche des Moluques. *Buffon, Pl. Enl. No.* 743?
Trichoglossus hæmatodus. Lin. Tr. 15. *p.* 289. *omitting Syn.*

LARGE flocks of these resplendent Lorys enliven the woods of New Holland, clinging to the Eucalypti trees, and sucking the honey from the blossoms by their brush-shaped tongue. Mr. Caley, whose notes we now follow, says it a bird remarkable for docility and attachment to some people, although a perfect scold to others. When young they are caught by the natives, but from the loss of their favourite food seldom survive in confinement. An individual, kept by Mr. Caley, on being shewn the coloured drawing of a native plant, tried to suck the flowers, and it even made the same attempt with a piece of cotton furniture. Its scientific history we have already given elsewere.

We have received more than usual pleasure at seeing our name affixed to this charming bird, and in clearing up its history. *(Ill. of Orn. vol.* 3. *p. iii.)* As a child we well remember our unwearied delight at seeing its figure in *White's Voyage.* As a collector we have preserved a series of nearly twenty specimens, and as a naturalist our name is no longer excluded from the Ornithological Nomenclature of New Holland. It is indeed somewhat curious, that while we were giving information to one of the writers in the *Lin. Trans.* upon the subjects of his paper, he should have studiously witheld from us the only public acknowledgement, for such assistance, it was in his power to make.

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PROTESILAUS *Leilaus*

PROTESILAUS Leilus,

Protesilaus Butterfly.

Genus Amphrisius, *Sw.* Sub-genus Protesilaus, *Sw.*

SUB-GENERIC CHARACTERS.

Wings trigonal, acute, yellow with black transverse bands; the inferior lengthened, narrowed, with two long acute tails; antennæ short, the club thick, slightly compressed, but solid, and convex all round; front very hairy; *Larva* covered with sharp spines. *Pupa* braced, but suspended downwards.

Type, Pap. Protesilaus. *Auct.*

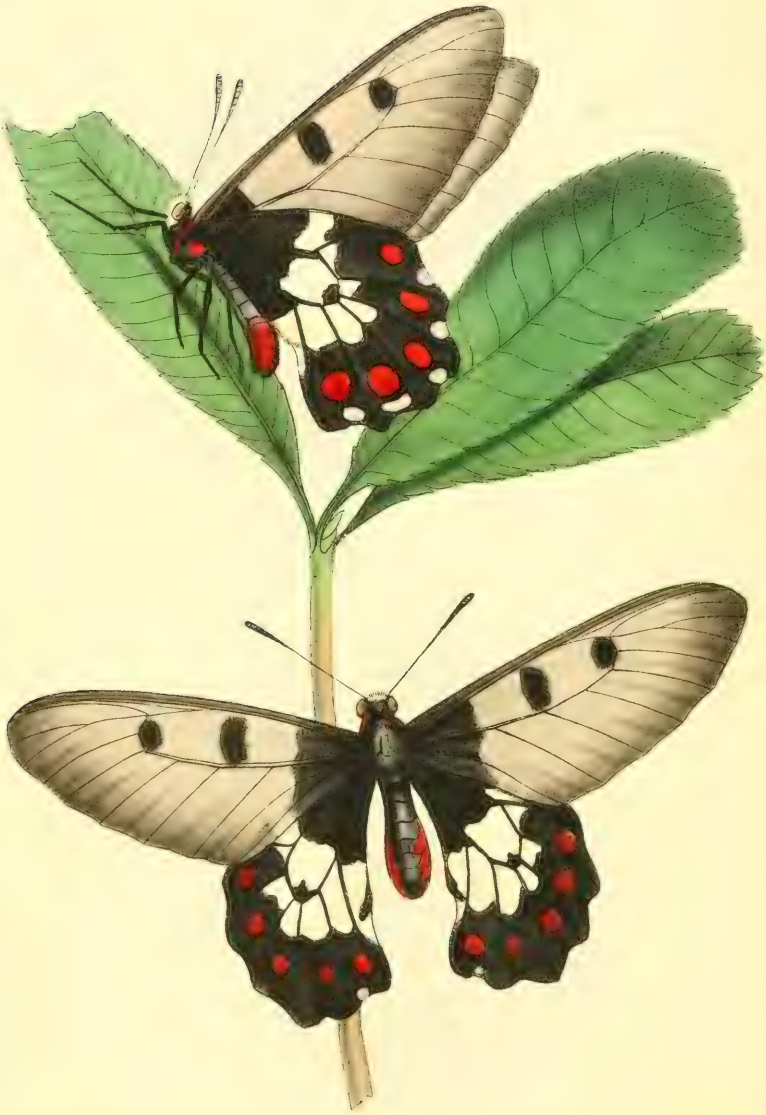
SPECIFIC CHARACTER.

Wings straw-colour; the superior with four, short, black, costal bands towards the base, and two towards the exterior margin; the latter uniting at the posterior angle.

Pap. Protesilaus. *Lin. Fab. Ent. Sys.* 3. *pl. p.* 23. *Ency. Meth. p.* 50. *Merian Sur. pl.* 43. *Cramer. pl.* 202. *f. a. b.*

FROM the resemblance which this insect bears to the rare British species, named by collectors the scarce Swallow-tail, *(Papilio Podalirius,)* it is generally called the Brazilian Swallow-tail. We advert to this circumstance, trivial as it may sound to scientific ears, first because it is one of the many proofs in which the nomenclature of the vulgar conveys greater information than that of the professor: and secondly, because these very names, in numberless instances, imply a perception of natural analogies, which, without the labour of philosophic research, suggest themselves to unscientific observers. In the present instance, these facts may be verified in the most unquestionable manner. According to our views, *Protesilaus* not only represents one of the primary groups of the Lepidoptera, but also typifies the Fissirostral birds, of which the swallows are the most pre-eminent.

Madam Merian's valuable work on the Insects of Surinam, has furnished us with a figure of the larva; which, unlike that of the European Swallow-tails, is covered with spines: the chrysalis also departs from the usual type of the family, in having the head directed downwards. These facts we have verified by an inspection of the original drawings, of M. Merian, now deposited in the British Museum. These are all important variations in structure, which can only be explained by the natural system.



GRESSON *delin. nat.*

CRESSIDA Heliconides,

Cressida Butterfly.

Sub-Fam. Papilionæ. Genus Papilio. Sub-Genus Cressida. *Nobis.*

SUB-GENERIC CHARACTER.

Wings diaphanous; posterior perpendicularly elongated, obtusely dentated or scolloped. Antenna stout, the club very thick.

Types, Cressida Heliconides and Harmonides. *Sw.*

SPECIFIC CHARACTER.

Anterior wings diaphanous, with the base, and two opaque, costal transvere spots, black; posterior black, with a central white space, and a marginal row of crimson spots, brightest beneath.

Papilio Cressida, *Fab. Ent Sys.* 3. 1. *p.* 20. *Don. Ill. of Ent.* 3. *pl.* 12. *f.* 2. *Ency. Meth. p.* 76. *No.* 145.

FOR a long time, the only museum in Europe which could boast of this butterfly, was that of Sir Joseph Banks; who found it in Van Deimans Land, during his celebrated scientific voyage with Captain Cook. Fabricius, the most eminent entomologist of that day, described the species from this specimen: which, with the whole of the Banksian Cabinet, was presented by its learned and munificent possessor to the Linnæan Society of London, where it still exists. The only published figure is that of Donovans, which is much too small, and is otherwise faulty. The species is still very rare in collections; our own, a fine pair, were received from Van Diemans Land.

Although unacquainted with the larva, and pupa state of this species, nature has stamped the perfect insect with the image of that group she intends it to represent. Its long, narrow, anterior wings, almost transparent, immediately reminds even the unpractised entomologist of the Heliconian butterflys; while the analysis of the genus *Papilio*, confirms this idea, by shewing that *Cressida* is the Heliconian type. We scarcely need remind the student of the natural system that if our theory be correct, this representation, under one form or other, will be found to pervade every group of *Lepidoptera.* In all such as we have yet investigated, this opinion has been fully verified.

PAPILIO *Memnon*

PAPILIO Memnon,
Memnon Butterfly.

Fam. Papilionidæ. Sub-Fam. Papilionæ. Genus Papilio.—*Sw.*
(Typical form or Sub-genus.)

Sub-Generic Characters.

Wings without tails; the anterior horizontally lengthened, entire; the posterior margin concave; posterior wings perpendicularly lengthened, the margin rounded and scolloped; antennæ long. *Larva* smooth; *Pupa* braced in an erect position.

Sub-Types of form. 1. *Typical,* Memnon. 2. *Sub-typical,* Erectheus. 3. *Aberrant,* Pammon, Drusius? Codrus.

Specific Character.

Wings black, rayed with blue-grey; inferior wings beneath with two rows of marginal black spots on a pale ground, and four red spots at the base.

Papilio Memnon, *Linn. Auct. Ency. Meth.* 1. *p.* 29. *No.* 10. *Cramer, pl.* 91. *f. c.*

Although of sombre colours, this butterfly is imposing in its size, and highly interesting. It is, in fact, that form which is *pre-eminently typical* of the whole of the Latrielian *Papilionidæ.* It seems to be common throughout India and particularly so in Java, from whence we possess several specimens. Dr. Horsfield's elaborate work has furnished us with figures of the caterpillar and chrysalis.

In now first defining some of the natural groups of the modern Genus *Papilio*, it may be as well to state that we give the results of minute analysis, the details of which we hope to lay before the public on a future occasion. In regard to the nomenclature, we have adopted the following principles, suggested to us by a scientific friend of no ordinary authority, as tending to facilitate recollection, without altering well known specific names. Each genus or sub-genus will be named after that species which is its peculiar type; and the new specific name of this species will imply one of its supposed natural analogies. Thus the sub-genus *Protesilaus,* derives its name from the typical species, while the specific name, now proposed of *Leilus*, points out the analogy of the group to *Urania* Fab. The sub-genus we now define, as being in our estimation, pre-eminently typical, retains the name of the genus. It seems also a geographic group, since all the species yet discovered belong to the old world.

CARACOLLA *acutissima*

Two-toothed Disk-Snail

CARACOLLA acutissima,
Two-Toothed Disk Snail.

Class Mollusca. Order Phytophages. *Swains.*

Generic (?) Character.

Animal with four tentaculæ, the lower pair very short; *Shell* discoid, greatly depressed; the spire but slightly raised above the body whorl; aperture large, oblique, angulated; the lower portion generally dentated; the margin thickened and reflected.

Specific Character.

Shell imperforate, with the spiral whorls flattened obliquely, the body whorl acutely carinated, and convex beneath: outer lip reflected; with from 1 to 2 tuberculated teeth near the extremity.

Caracolla acutissima. *Lam. Syst.* 6. *p.* 2. *p.* 95. *Knorr. vol.* 4 *pl.* 5. *f.* 2. 3.
Encycl, Meth. pl. 462. *f.* 1. *a. b.?*
Helicodonta. *A. de Fèrrusac. pl.* 58. *f.* 2.
Helix caracolla. *Guerin. Iconog. du Règ. Anim.* Mol. *pl.* 6. *f.* 1.

It is seldom we can deliniate more than the covering of testacious animals, particularly where the species are natives of tropical countries. In the present instance we owe this power to the singular fact of this snail having survived a voyage from Jamaica, and peered out upon an English sun. It is now near forty years ago since an intelligent correspondent of our honoured father sent him from Jamaica, a box of land shells: they were carefully packed in moist decayed wood, and enclosed the living animals. The season was summer and the voyage short; the box was immediately opened, and by placing the shells in luke-warm water, the animals of every one slowly emerged from their shells. Of their ultimate fate we know not: but that celebrated artist and entomologist, the late Mr. Lewin, then a guest in the house, executed highly finished drawings upon vellum of each species; and from one of these our present figures are faithfully copied. At the request of our friend Dr. Leach, a copy was also made by some one and transmitted to Baron de Fèrussac, for his great work upon Land shell, where it will be found engraved at pl. 58. fig. 2. M. Guerin has re-copied this latter figure, but as both are inaccurate, without any fault of these gentlemen, (who never saw the original drawing of Lewin) we have now represented it correctly.

PRINEA *familiaris*

Indian Wren warbler

PRINIA familiaris,

Indian Wren-warbler.

Family, Sylviadæ. Sub-Family, Sylvianæ. *Sw.* Genus, Prinea. *Horsf.*

Generic Character.

Bill rather lengthened, much compressed, entire; rictus smooth; wings rounded; tail broad and cuneate; feet large, strong.

Specific Character.

Above olive brown, beneath yellowish; ears, throat, and tips of the greater and lesser wing-covers white; tail feathers tipt with dusky white, and margined beneath by a black bar.

Prinia familiaris. *Horsfield. Zool. Researches. Linn. Trans.* 8. 165.

The sultry groves of India are not without birds which recall to the European the songsters of his own distant land. And although nature, in her boundless profusion, has so distributed her productions that even the little "Kitty Wren" may in vain be looked for beyond the confines of Europe, its representative in the East is no less neat, active, and familiar to the habitations of man. The *Prinia familiaris*, observes Dr. Horsfield (whose politeness enables us to figure the bird), is abundant in many parts of Java, near villages and gardens, in the confines of which, among trees and shrubs, it builds its nest. Sprightly and active in all its motions, it sports among the branches in short and rapid flights, and has received its native name from its enlivening and pleasant notes. Our figure is the size of life, and to avoid a tedious description, all the details have been accurately measured.

We must refer the scientific Ornithologist, for our exposition of the natural affinities of this group, to *Northern Zoology, vol.* 2, *p.* 200. It is unquestionably the Rasorial and Scansorial genus of the Sub-family *Sylvianæ*, as there pointed out, and of which *Orthotomus* is a sub-genus, or type of form.

AMPHRISIUS *Mimulus*

AMPHRISIUS Nympalides,

Amphrisius Butterfly.

Family Papilionidæ. Sub-Fam. Papilionæ. Genus. Amphrisius. *Sw.* (Typical Sub-Genus).

SUB-GENERIC CHARACTERS.

Wings without tails, the anterior externally dentated, the posterior short and rounded, the margin scolloped; Antennæ long. *Larva* covered with spine-like tubercles; *Pupa* braced in an inverted position.

SPECIFIC CHARACTER.

Anterior wings black, with longitudinal paler rays; posterior wings yellow, with a black serrated border, and an internal row of black spots.

Papilio Amphrisius. *Godart. Ency. Meth.* 1. *p.* 27, *No.* 7.

Papilio Heliacon. *Fab. Ent. Sys.* 3. 1. *p.* 19. *Don. Ind. Ins. pl.* 19. *f.* 1.

Papilio Amphrisius.—*Horsf. Descrip. Cat. Part* 1. *pl.* 4. *f.* 13.

THE Butterflies of which we consider the species now figured as the typical example, constitute one of the great natural divisions of the modern genus *Papilio*; and they are peculiarly distinguished in all their three stages of existence, namely in the caterpillar, the pupa, and in the winged state. Dr. Horsfield has enabled us to illustrate the two former, and we add a figure of the perfect butterfly from specimens in our own cabinet, collected in Java. It seems subject to much variation in point of colour, but we have strong suspicions that some of the varieties are distinct species. The richness of the black resembles Genoa velvet, while that of the yellow may be compared to glossy satin. All the larger species of the group are Oriental, but we suspect America is not without typical examples, although they are of a much smaller size. The species however, even with these additions, are so few, that the sub-types of the group cannot be accurately made out.

As this seems to be the pre-eminent type of the genus, we preserve to it the generic name.

ACHATINELLA PL. I

ACHATINELLA Pica,

The Bead Snails.

Class Mollusca. Order Phytophages. *Lam. Sw.* Genus—?

SUB-GENERIC CHARACTER.

Shell oblong-conic, spiral, Columella with the base thickened and truncate; inner lip none; outer lip internally thickened; aperture without teeth. *Nob*

Type *Monodonta seminigra* Lam.

SPECIFIC CHARACTER.

Shell trochiform, black; apex and base of the pillar white.

Monodonta semi-nigra *Lam.*

Achatina pica. *Swains. Monog. in Brands Journal, April,* 1828, *p.* 84.

ACHATINELLA is a very peculiar group of land shells, found only in the Pacific Islands. They are all small, and so remarkably beautiful, that the natives use them for ornaments. It was under this form that seven different species came into our possession on the return of Captain, now Lord Byron, from his voyage to the South Seas. As the systematic conchologist will find them fully described in the Journal above quoted, we now only illustrate them by figures.

ACHATINELLA perversa, *fig.* 2.

SPECIFIC CHARACTER.

Shell reversed, sub-trochiform, fulvous brown with darker transverse bands and longitudinal lines; apex and suture white.

Achatinella perversa. *Swains. Monog. No.* 2, *p.* 84.

OUR figures of this elegant species are somewhat larger than nature.

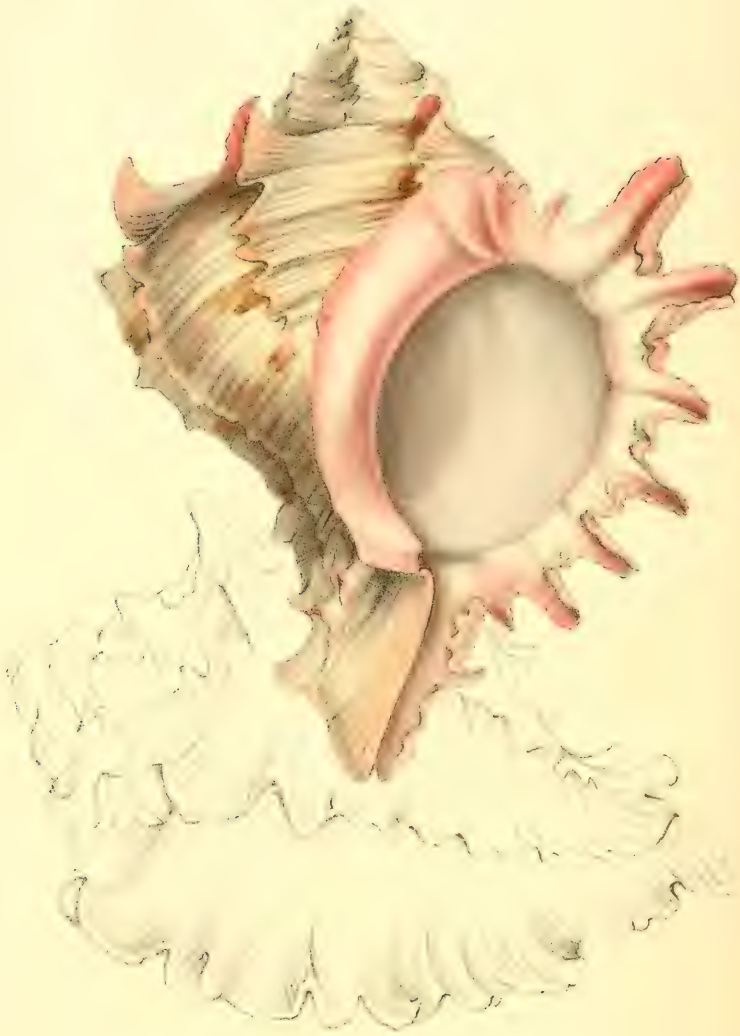
ACHATINELLA Acuta, *Fig.* 3.

SPECIFIC CHARACTER.

Shell ovate-oblong, chesnut, with a marginal fulvous band; spire somewhat lengthened, acute, the tip black.

Achatinella acuta *Sw. Monog. No.* 3, *p.* 84.

SHELL somewhat pyriform, the spire being pointed, and considerably longer than the aperture: In these respects it differs considerably from the two preceding, but the great peculiarity of the twisted and truncated columella or pillar, sufficiently points it out as belonging to this group.



MURICINÆ. Pl. 3.
Murex curistomus

MUREX (*Centronotus*) eurystomus,
Wide mouthed Murex.

Family Cassidæ, Sub-family Muricinæ, *Nob.* Genus. Murex *Auct.*

SYNOPSIS OF THE SUB-GENERA.

1. *Typical.*

Canal very long: Shell armed with tooth-like spines mostly arranged in three varices — MUREX *Auct.*

2. *Sub-Typical* (?).

Canal very long: Shell without spines, varices tuberculated. — HAUSTELLARIA. *Sw.*

3. *Aberrant.*

Canal moderate: Shell with foliated or compressed varices.

1. Varices foliated, mostly three. — PHYLLONOTUS. *Sw.*
2. Varices numerous, mostly acute. — CENTRONOTUS. *Sw.*
3. Varices compressed, fin shaped. — PTERYNOTUS. *Sw.*

SPECIFIC CHARACTER.

Shell with from 7 to 8 simple foliated varices; body whorl with three brown bands; aperture effuse, tinged with roseg; umbelicus very large.

Murex Saxatilis. *Auct. Lamark. 7. p.* 167. *Martini. pl.* 108. *f.* 1013.

We feel some surprize that Lamark should have viewed this large and imposing *Murex* as one of the varieties of *Saxatilis*, from which it is unquestionably distinct. It is by no means common, nor do we know its precise locality.

In directing the attention of the philosophic Zoologist to the above synopsis, we feel called upon to express our opinion on the unfortunate Denis De Montford, whose labours, however honoured in his own country, have neither been understood nor appreciated in this. We can say of him, what can be said of very few, that he had an intuitive perception of natural groups. And if we cannot place him on a par with his great rival Lamark, in the extent of his researches, or the polished accuracy of his names, we can safely affirm that in other respects, he is fully equal, either to him, or to any of his successors.

There are some extraordinary analogies between the natural types of this genus, and the series of vertebrated animals, which we cannot at present develope. Nor can our doubts on the Sub-typical form, which we rather think has not been discovered, effect any alteration of the series here pointed out.

POLYDORUS *Thoas.*

POLYDORUS Thoas,

Polydorus Butterfly.

Sub-family Papilionæ. Genus Amphrisius. Sub-genus Polydorus. *Sw.*

SUB-GENERIC CHARACTER.

Anterior wings horizontally narrow and obtuse, posterior perpendicularly lengthened, and furnished with prominent spatulate tails; *Larva* covered with fleshy tubercles; *Pupa* braced and suspended, but with the head downwards.

Types, Pap. Polydorus. Polystes. Romulus. &c. *Auct.*

SPECIFIC CHARACTER.

Anterior wings brownish black, with darker stripes between the nerves; posterior, black with a central five-parted spot of white; lunules round the margin, obscure above, bright crimson beneath.

Papilio Polydorus *Linn. Cramer. Pl.* 128. *f. a. b. Fab. Ent. Syst.* 3. 1. *p.* 9. *Ency. Meth. p.* 72. *No.* 130. *Horsf. Cat. pl.* 3. *f.* 17. 17. *a.* (*larva and pupa*).

AMONG the most remarkable of those laws which belong to the natural system, is that which assigns to every great division of our globe its peculiar races of animals: and these in numerous instances, are so marked, that a naturalist would no more expect to find such genera inhabiting a different continent, than a Physiologist would hope to discover a race of Hottentots among the Highlands of Scotland. It is under the tropical latitudes of the old world (and chiefly those of Asia), that nature has placed the group of butterflys which we now, for the first time, characterize. Distinguished, in the most beautiful manner, by their larva and pupa, they shew, even in the external appearance of the perfect insect, an unerring distinction, in the dark stripes between the nerves of the anterior wings. We have indeed, in the tropics of America, a race of black and crimson butterflys representing these of India; but they belong to a very different group; and are known at the first glance by their broader wings, totally destitute of the stripes just mentioned.

M. M. Latrielle and Godart, are evidently mistaken regarding the insect figured by Clerk, which they consider to be the female of *Polydorus;* this error we have ascertained from fine specimens of both sexes, sent from Java and now in our possession. We have figured the male, and Dr. Horsfield has enabled us to add the Caterpillar and Chrysalis.

PTILIOGONYS *cinereus*.
Male.

PLILIOGONYS cinereus. *male.*
Yellow-vented Short-foot.

Family Laniadæ. Sub-fam. Tyranninæ. Genus Pliliogonys. *Nob.*

GENERIC CHARACTER.

Zool. Journ. no. 10. p. 164.

SPECIFIC CHARACTER.

Light cinereous; flanks olive; under tail covers bright yellow; quills and tail glossy blue-black, the latter ornamented with a central snowy band; chin and vent white.

For Synonyms—see pl 62.

ON the sixty-second plate of these Illustrations, we figured the female of this elegant and highly interesting bird, from a specimen sent to us from Mexico, by the late Mr. W. Bullock. We are now enabled to add the male from a fine example, obligingly presented to us by John Taylor Esq. F. R. S. It was killed near Real del Monte; and these, we believe, are at present the only specimens that have reached England.

By viewing this as the type of the Scansorial group of the Tyrant-flycatchers, *(Tyranninæ)* every circumstance, even the most minute, regarding its structure and its colours will be explained. As representing *Brachypus*, (North. Zool. 2. 485.) and its analogies, it has the under tail covers richly coloured. As representing *Leiothrix* (II. 490.) it has the same coloured cinereous and silky plumage: as a scansorial type, it has a conspicuous although an *incumbent* crest, and a long ornamented tail. It is a Titmouse among the Tyrants, and is nearly as much of a *Ceblepyris* as of a *Tyrannus*. Indeed, when we described the female, we thought it actually entered the circle of the former, but the laws of representation has set us right on this point. *Phœnicornis* is the first of the *Ceblepyrinæ*, as *Philiogonys* is the last of the *Tyranninæ*. The *females* of *Phœnicornis* are clothed in the same slate coloured plumage, but, as being of a *fissirostral* type, their mouths are conspicuously bristled, while those of *Ptiliogonys* are quite smooth. Finally, the wings are those of a *Ceblepyris*, but the tail that of a *Tyrannula!*

PLECOCHEILUS *undulatus*.

PLECOCHEILUS undulatus.

Waved Pupa-snail.

Family Pupadæ. *Guilding.* Genus Carychium. *Muller.*
Sub-Gen. Plecocheilus. *Guild.*

Sub-Generic Character.

Animal hermaphrotide, snail-like; the head bilobed, and bearing four tentaculæ, two of which are long and terminated by the eyes; mandibles greatly lunated, with a small transverse mouth and a triangular cutaneous plate; mantle perforated. *Eggs* large, externally calcarious. *Shell* oval, ventricose, the two last spiral whorls very short, but elevated; aperture entire, elongated; outer lip thickened and reflected; inner lip thin, nearly obsolete; pillar with a strong compressed inflexed plate. *Guilding.*

Specific Character.

Shell irregularly and minutely corrugated, and longitudinally striated; marked beneath the olive epidermis with oblique, undulated, dark stripes.

Carychium undulatum (1814). *Leach. Zool. Mis.* 1. *pl.* 35.
Auricula caprella (1822). *Lam. Sys.* 6. 2. *p.* 140. *Chemnitz pl.* 176, *f.* 1701.-2.
Plecocheilus undulatus. *Guilding in Zool. Jaurn.* 3. *p.* 532.

The pleasure which our scientific brethren will receive from possessing this copy of Mr. Guilding's beautiful drawing, will be changed into regret on knowing that the gifted hand which originally traced it is now cold. A liver complaint, doubtless brought on by too much exposure to a tropical sun, terminated the mortal career, a few months ago, of this accomplished Zoologist and excellent man. The name of Guilding now belongs to posterity. His loss, and that too in the prime of life, leaves a blank in the ranks of science, which there is no one so qualified to fill; where can we look for profound and indefatigable research, matured knowledge, a ready pen and an exquisite pencil, all employed unceasingly to illustrate *from life* the animals of tropical regions. The search, unfortunately, will be fruitless. May his spirit now be with that God whose minister he was, and whose works upon earth it was his purest delight to study.

This noble species was discovered by Mr. Guilding, in great numbers, upon the trunks and branches of trees in the forests of St Vincent: its eggs are hard like those of a bird, and the young shell resembles that of a *Succinea.* In *Carychium* the eyes are at the *base,* but here they are at the *tips* of the tentaculæ.

PROTESILAUS *Swainsonius.*

PROTESILAUS Swainsonius,

Swainsonian Swallow-tail.

Sub-family Papilionæ. Genus Amphrisius. Sub-genus Protesilaus. *Nob.*

SUB-GENERIC CHARACTERS.

See pl. 93.

SPECIFIC CHARACTER.

Wings pale straw-colour; anterior with a forked band near the black exterior margin, and another much shorter towards the middle, both black.

Papilio Swainsonius. *Langsdorff, MS.S.*
Mus. Nost.

WE have searched in vain for some account of this very distinct and handsome species, collected by our venerable and enthusiastic friend Dr Langsdorff, in the interior of Brazil; and transmitted to us some years ago, in remembrance of the many happy days we passed together in the enchanting scenery of that delightful region. We have not seen the species in any of the London collections, and we believe it altogether undescribed.

The Larva and pupa are of course unknown to us, but the whole structure of the perfect insect agrees so truly with that of *Protesilaus Lelius*, that we have no doubt whatever of its belonging to the same sub-genus, and thus becoming an interesting addition to a group, capable of the most complete and diversified demonstration.

PODALIRIUS *Pompilius*.

PODALIRIUS Pompilius,
Pompilius, or Javanese Swallow-tail.

Sub-family Papilionæ. Genus Papilio. Sub-genus Podalirius. *Nob.*

Sub-Generic Character.

Wings trigonal, acute, yellow, with black transverse bands, the inferior with two long narrow acute tails; *Antennæ* short, the club thick and solid at the base, but greatly compressed at the tip, where it is concave beneath; *head* small, front hairy; *Larva* smooth; *Pupa* braced in an erect position.

Type Podalirius Europæus. *Nobis.*

Specific Character.

Wings above pale yellow, the anterior with five short, black, stripes across the areola; and two others, much longer and broader, close to the exterior margin: posterior wings without lunulate spots.

Papilio Pompilius. *Fab. Mantissa* 2. *p.* 8. *Ent. Syst.* 3. 1. *p.* 25. *Ency. Meth.* 1. *p.* 49. *Horsf. Cat. pl.* 3. *fig.* 5. 5. *a. (larva and pupa.)*

We may term this the Javanese Swallow-tail, for in that and the other Indian islands it appears to be not uncommon. We are indebted to the elegant *Catalogue* above quoted, for our figures of the *larva* and *pupa*; and to the rich collection of Mrs. Children for the examination of the perfect insect.

Entomologists will doubtless feel surprize that this and the *Protesilaus* on our last plate, should be placed as distinct types in two different genera. We have not done this without long deliberation; but we cannot, in a work of this nature, enter into those details which would demonstrate these divisions to be truly natural, in the most rigid acceptation of the word. We desire not, however, that Entomologists should adapt our views,—at least for the present. We hope, indeed, that they will not, because experience has shewn, that until a theory has been fully explained, more injury than good results to science, from injudiciously adopting, and hastily applying, a system not understood. We only desire, in short, to record our views, that they may be comprehended hereafter. We consider this as the Thrysanuriform type of the sub-genus, and our English *Papilio Machaon* of authors, as the Heliconian.—*Tempus ducamus.*

LEPTOCIRCUS *Curius*.

LEPTOCIRCUS Curius,
Clear-winged Butterfly.

Sub. Family Papilionæ. Genus Urania. Sub-genus Leptocircus. *Nob.* *(Erycinian type).*

Sub-Generic Characters.

Size and aspect of an Erycina; *Anterior wings* sub-hyaline; *posterior* greatly lengthened, and terminating in two long tails; *Head, thorax,* and *body* very thick; *Anterior feet, palpi,* and *Antennæ* papilioniform.

Specific Character.

Black; the exterior half of the superior wings hyaline, bordered with black, inner half with a green band, continued on the inferior wings, which are plicated, and edged externally with white.

Papilio Curius *Fab. Ent. Syst.* 3. 1. 28. *Don. Ind. Ins. pl.* 47. *f.* 1. *bad.*

There are only two collections we believe in this country, which possess this rare and extraordinary butterfly, and it may be even doubted whether these specimens do not belong to distinct species. One is in the Banksian cabinet, now possessed by the Linnæan Society, the other in that of the lady of our friend J. G. Children Esq. Zoologist to the British Museum. We are told the species has been "made into a genus" by some continental methodist, but who, according to the disreputable and slovenly mode fast creeping *among us*, gives no definition. We have elsewhere expressed our reasons for rejecting all such names *(North. Zool.* 2. *pref. lx.)*, and we are thus pledged to do so upon every occasion.

Nature has so admirably disguised this insect in the external form of that tribe of butterflys which she intends it to represent, that it was only upon looking to its anatomical construction, that we discovered it was a type of the true *Papilionæ*, and not of the *Erycinæ*. The construction of the anterior feet, of the head and palpi, and of the antennæ, all which are here represented, magnified, places this fact beyond doubt, and leaves us nothing to desire but a knowledge of its caterpillar and chrysalis, and of the direction of the wings when the species is at rest. We suspect that like those of *Urania*, they are then *deflexed.*

TROGON *Mexicanus, f.*
Mexican Trogon, fem.

TROGON Mexicanus,
Mexican Trogon. female.

Tribe Fissirostris. Family Trogonidæ. *See North Zool.* 2, *p.* 326.

Generic Characters.

Body thick. *Bill* very short, strong, thick, nearly triangular, but the sides compressed, surrounded by long, stiff, bristly feathers, the culmen arched from the base. *Wings* very convex, the quills graduated; tail very broad, feet short, weak, gressorial.

Sub-Genera.

1. Bill with several unequal serratures on the margin of the upper mandible: head not crested, tail even, tarsi feathered to the base of the toes; anterior toes united to half their length. America.	Trogon. *Auct*
2. Bill serrated; head with an erect compressed crest; tail very long, cuneated. America.	Calurus. *Sw.*
3. Bill entire. Inhabits tropical Asia.	Harpactes. *Sw.*
4. Bill with obscure serratures: tarsi naked, covered with scales; the two anterior toes divided nearly to their base. (*Type*, Trogon Narina). Africa.	Apalloderma. *Sw.*

Specific Character.

Female. Breast and upper plumage olive brown; body and under tail covers crimson; front, chin, and ears grey; wing covers lineated with undulate dusky lines; two middle tail feathers ferruginous brown, with black tips.

We have already given the general reader some account of the manners of these very singular birds, and we have said more upon them in *North. Zool. Vol* 2. Having figured the male on our 82nd plate, we now exhibit, in the female, that remarkable difference between the sexes, which pervades all the species. Our figure and specific character renders a detailed description of the plumage unnecessary; it should be observed, however, that the lateral tail feathers, in the female, are without those two black transverse bands on the inner web, towards the tip, which are so conspicuous in the male. There is another species from Mexico, which country seems to be the most northern range of these birds. We feel gratified at being able to characterize four typical forms of the genus; all of which, at the same time, are marked by geographic peculiarities.

ACHATINELLA. Pl. 2.
1, bulimoïdes. 2, livida.

ACHATINELLA bulimoïdes,

Thick-spired Achatinella—middle figures.

GENERIC CHARACTER.

See pl. 99.

SPECIFIC CHARACTER.

Shell ovate-oblong, subventricose, whiteish, with chesnut bands; spire thickened, the tip pale brown.

Achatinella bulimoïdes. *Sw. in Brands Journ. Ap.* 1828. *p.* 85.

WE continue our Illustrations of these pretty little land shells, of which all the species, as we before remarked, are natives of the South Sea Islands, and very little known to collectors. The present is distinguished by the thickness of its spire, the apex being more suddenly pointed. We have represented two varieties in point of colour, but in both the suture is scarcely, if at all, margined by an indented grove.

ACHATINELLA livida,

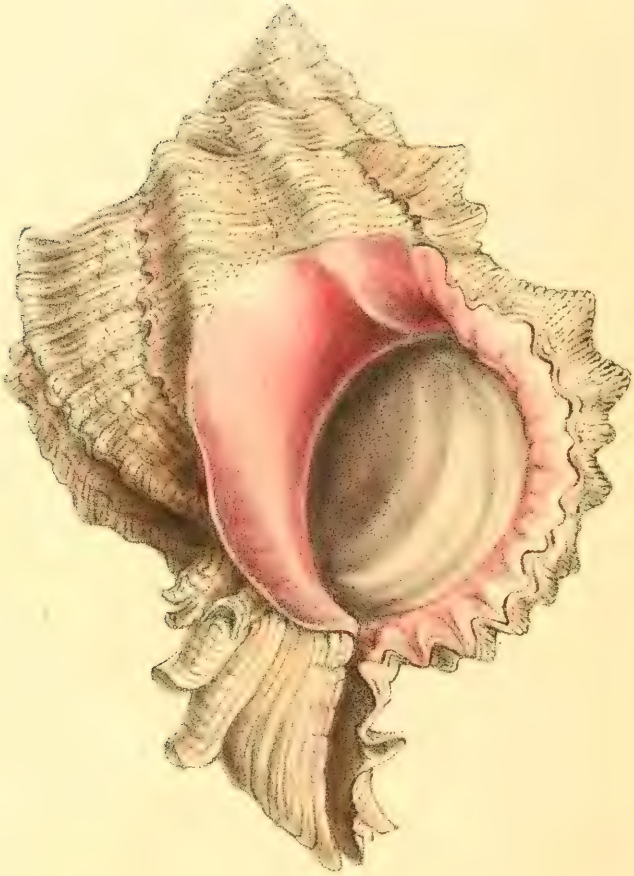
Livid Achatinella.

SPECIFIC CHARACTER.

Shell reversed, ovate, obtuse, livid brown or greyish; spire thickened; suture with a deep fulvous line.

Achatinella lividia. *Brands Journ. Ap.* 1828. *p.* 85.

A small reversed species, unbanded, and scarcely exceeding half an inch in length. In form it perfectly resembles the green variety of *Bulimus citrinus*. The three specimens in our museum vary in colour from a light olive brown, to a livid purple which lies in longitudinal shades, and gradually changes, on the spiral whorls, to white; suture marked by a line of deep orange brown; aperture white, tinged with purple.



MURICINÆ. Pl. 3.
MUREX (PHYLLONOTUS) *Imperialis.*
var. a.

Wy

MUREX *(Phyllonotus)* Imperialis,
Imperial Murex. var. a.

Genus Murex. Sub-genus Phyllonotus. *Nob.*

SUB-GENERIC CHARACTERS.

See pl. 100.

SPECIFIC CHARACTER.

See pl. 67.

IN a popular work like this, we wish to consult the taste of the amateur, no less than of the philosophic naturalist; and with this object we have delineated a beautiful variety, having the aperture rose colour, of the *Murex imperialis* already figured at pl. 67 of our second volume. It was then in the possession of Messrs. Stuchbury, and was nearly the only one, among very many of the usual orange-mouthed specimens, which came to their hands.

We have already intimated that the series of types in this genus, (see pl. 100) besides possessing innumerable analogies in the class *Mollusa*, exhibits a most singular one with the series of vertebrated animals; four of which can be traced by comparing them with four of the classes of the vertebrated circle. Commencing with *Phyllonotus*, we may call them, from the hideous and repulsive aspect of many of the species, the *Reptile* type, as the name given to one *(Murex scorpio)*, sufficiently intimates. In the tooth-like spines of *Murex tenuispinosus* we see some resemblance to the teeth of quadrupeds: the *Murex haustellum* has been well compared to the head of a snipe, while in the fin shaped varices of *Murex pinnatus*, we have a representation of the *fish*. If the analogy between *Centronotus* and the *Amphibia* cannot be traced, it is because the latter has so few forms; but the Hedgehogs, which represent the *Amphibia* in the circle of Quadrupeds, are again represented under the form of a shell, in the sub-genus *Centronotus*. These analogies, however remote are unquestionably natural, *because they follow each other in a uniform series.*

Thus, Murex	. . represents	Mammalia.
Haustellaria	. . . .	Aves.
Pterynotus	. . . . .	Pisces.
Centronotus	. . . .	Amphibea—Hystrix.
Phyllonotus	. . . .	Reptilia.

MARIUS (PETREUS) *Thetys.*
Larva & Pupa.

MARIUS *(Petreus)* Thetys,
Thetys Butterfly.

Family Nymphalidæ. Sub-family Paphianæ. Genus Marius. Sub-genus Petreus. (Heliconian Type.)

SUB-GENERIC CHARACTER.

Superior wings long, horizontally lengthened; Larva naked, with 3. 4 fleshy filaments on the body.

SPECIFIC CHARACTER.

See pl, 56.

THE perfect insect, or butterfly, of this elegant species, we have already figured at pl. 59 of our second volume: and that our illustration of a form so interesting may be complete, we have now delineated the caterpillar and the chrysalis, as given by Stoll; together with a sprig of the *Cashew* tree upon which it feeds. Every entomologist, upon looking to the perfect insect, will immediately be struck with its resemblance to the long-winged Heliconian Butterflys, and to the genus *Euplœa*, which is the Erycinian type of that family. Now this resemblance, which hardly requires pointing out, is a perfectly natural analogy; and is confirmed in the most remarkable manner by the caterpillar, which puts on that peculiar form which distinguishes *Euplœa*. The species in short, in every stage, exemplifies the truth of that fundamental law of nature which we have elsewhere so fully illustrated, viz. "that "every *natural* group, contains representations of ALL others "in the same class," following each other precisely in the same series: thus establishing a truth which has long been suspected, but not before demonstrated, that the laws of variation are precisely the same in every group throughout the animal kingdom. The genus itself represents the Swallow-tailed types already figured (*Podalirius*, *Protesilaus*, and *Leptocircus)*, but of the three remaining sub-genera of *Marius*, we are as yet ignorant. It is, however, by this genus that the two sub-families of *Paphianæ* and *Heliconinæ* are united; as it blends into the latter by means of the genus *Fabius*, which we shall shortly illustrate.

ZEONIA *Heliconides*. Pl. III.

ZEONIA Heliconides,

Zeonia Butterfly.

Family Erycinidæ. Sub-family Erycinæ. Genus—; Sub-genus Zeonia. *Nob.*

Sub-Generic Character.

Wings trigonal, hyaline, the posterior ending in long tails; Palpi very short, not projecting beyond the head; Antennæ hairy, with the club very small, but gradually thickening from the base

Specific Character.

Wings hyaline; the margins, and a common central band black and opaque; inferior wings two-tailed, with a red stripe at the anal angle.

No method is more calculated to demonstrate the existence of that symbolical representation which reigns throughout nature, than that of bringing before the eye of the student a series of forms belonging to different families, but which are *disguised*, under an outward appearance of general similitude; How few, even among professed entomologists, would suspect that the present butterfly, and *Leptocircus heliconides*, pl. 106, were of totally different families: looking to their general aspect, as size, form, and colour, we should even be tempted to place them in the same genus; On closer examination, however, we find that one is a genuine *Papilio*, and the other an *Erycina*; That this fact may be placed beyond all doubt, we have given magnified details of both insects, which, from their great rarity, will be highly acceptable to the Entomologist.

The specimen here figured is the only one we met with in Brazil, nor have we seen the species in any other collection; Excepting the black bands and the crimson spots, all the wings are transparent; the under surface being similar to the upper. We possess the mutilated remains of a second species; but we know not to what natural genus they belong.

Fig. 1. *Zeonia*, wing. 2. *Leptocircus*, wing. 3. *Zeonia*; anterior foot, with the claw more enlarged; 4. head and palpi in profile; 5. Antennæ.

LEPTOLOPHUS *auricomis*.
Golden-eared Parrakeet.

LEPTOLOPHUS auricomis,
Golden-eared Parrakeet.

Sub-family Psittacinæ. Genus Platycercus. Sub-genus Leptolophus. (The Rasorial type.)

Sub-Generic Character.

Bill distinctly toothed, culmen slightly carinated; nostrils thick, tumid, naked; head crested; wings very long, outer web of the quills not sinuated; tail very broad, cuneated, the two middle tail feathers conspicuously longest and pointed.

Specific Character.

Cinereous, wings with a longitudinal white stripe; ears orange: lateral tail feathers banded with yellow and black.

Palæornis Novæ-Hollandiæ. New Holland Parrakeet. *Lears Parrots, No* 8.

The discovery of this remarkable and highly interesting Australian species is due to Allen Cunningham, Esq. who, on an inland expedition ordered by our government, in 1827, discovered it in small flocks on the arid sandy plains between Lat. 29 and 28, 50. Long. 150¾ E. We must again express our public thanks to this intelligent and liberal naturalist for the ornithological specimens then collected. Among these were two skins of the bird in question; but as the mere addition of a new species to our already overwhelming list would be of little importance to the philosophy of the science, we have hitherto refrained from publishing it. In truth, the natural affinities of this extraordinary Cockatoo-Parrakeet called for a much deeper investigation of the whole family than it had yet received, nor are we ashamed to confess that nearly five years elapsed before we could partially accomplish this, with any thing like satisfactory results. But we regret not the delay, since it is obvious that the illustration of such an apparently anomalous form as this, is infinitely more useful to science than the specification, *in a few lines*, of a hundred new species, or even of as many new genera, unaccompanied by analytical or comparative results. The time, in fact, is now gone by, when such crude additions to ornithological nomenclature, possess any claim to permanent interest, or carry with them any authority: they encumber rather than advance science, by keeping up the already overwhelming stock of undigested materials. Mr. Lear has recently given beautiful figures of this species, but under the peculiarly inappropriate name of *Palæornis Novæ-hollandiæ*. The genus is *Platycercus*, *all* the species of which are from New Holland, excepting those of the Fissirostral type. The exactness of our figure renders a detailed account of its plumage unessential.

MUREX *(Centronotus) radix*

MUREX *(Centronotus)* radix,

Porcupine Murex.

Genus Murex. Sub-genus Centronotus. *Nob.*

SUB-GENERIC CHARACTER.

See pl. 100.

SPECIFIC CHARACTER.

Shell ovate globuse, trasversely grooved; with numerous varices, armed with compressed, spine-like foliations: colour white; the spines, base, and inner lip black.

Murex radix. *Gm.* 3527. *Lam. Syst.* 7. 168.

CENTRONOTUS *radix* was formerly a shell of excessive rarity, but many specimens have latterly been brought from Panama; one of these, obligingly lent to us by Mr. Cummin, we have here figured of the natural size.

We cannot too often place before the student those objects in nature which seem more especially to illustrate that wonderful system on which the whole has been created. In the infinite diversity which pervades the works of "Him who made us," two things have obviously been intended: one, the manifestation of His power in the creation of the individual: the other, an illustration of some important truth connected with the spiritual welfare of mankind. The first is manifest, and speaks to our senses: the second is emblematical, and calls for an exertion of those reasoning faculties with which the Creator, for such purposes, aided by those helps he has promised, has given to us. In accordance with this latter assumption, both divines and Naturalists concur in considering Nature as a book of Emblems, "where one thing represents another." That this theory, resting heretofore on general belief, is capable of mathematic definition, we have elsewhere largely demonstrated, (North. Zool). And if, as regards one division of animated nature the theory is correct, it follows that it will be equally manifested in *all* other portions of the animal world, when they are sufficiently investigated. Hence it is that remote resemblances between objects, widely different in themselves, can be explained: hence the analogy which the *Glires* bears to the Hedgehogs, and to the *Ceblepyrinæ;* and hence the resemblance between this shell and the Porcupines; an analogy the more singular, as it extends even to the black and white colour of the spines.

JASIA Australis,
Australian Jasia-Butterfly.

Family Nymphalidæ. Sub-family Paphianæ. Genus,—

SUB-GENERIC CHARACTER.

See pl. 90.

SPECIFIC CHARACTER.

Wings above yellowish white, the outer half of the anterior black with a series of spots disposed in the shape of the letter Y; inferior wings with a black border, margined by cinereous, and an orange spot at the anal angle.

WE believe the specimen from which our figures of this new and strikingly distinct butterfly were taken, is the only one which has yet been sent to Europe. It was captured by Mr. Cunningham, who accompanied Captain King, in his voyage to the North West coast of Australia, on the skirts of Careening Bay, Port Nelson, where the Ship Mermaid was hove down; and the officers had more leasure to attend to zoological pursuits. Mr. Cunningham remarked that it flew with great swiftness, in which respect it perfectly resembles the rest of the genus *Jasia*, of which it is a typical example. The geographic range of this group is thus proved to extend from the South of Europe to Australia, but it is entirely unknown in the new world.

The family of *Nymphalidæ* is the sub-typical group of the diurnal Lepidoptera, forming our tribe *Papiliones*. In its own circle it therefore represents the *Feræ* among quadrupeds, the *Raptores* among birds, the *Aptera* among annulose animals, and the *Scolopendridæ* in the order *Myriapoda*. The analogical representations resulting from this view of the subject are innumerable.

TERACOLUS *Sub-fasciatus*

TERACOLUS sub-fasciatus,
Burchells Yellow.

Family Papilionidæ. Sub-family Colianæ. Genus (?). Terocolus *Nob.*

Generic Characters.

Antennæ with the club abrupt, and more or less compressed anterior wings trigonal, posterior rounded; Palpi as in *Colias*, but the scales intermixed with hairs.

Specific Character.

Anterior wings pale yellow, with a terminal orange spot, margined externally with brown, and internally by a short black bar; areola with a black dot; posterior wings yellowish white, both beneath immaculate.

Mr. Burchell was the first who discovered this unpublished species in the interior of Southern Africa, and by his kindness we are enabled to illustrate it. His specimens, unfortunately, are not in the best condition, for he was obliged to preserve many of his insects in books; and these, having been among the number, may probably have had the antennæ more compressed than they were in nature. The form of this butterfly, nevertheless, is perfectly distinct from *Colias*, as may be seen by comparing the nerves of the anterior wings, here given in outline.

Not having completed our analysis of the *Colianæ*, we cannot speak with any confidence on the rank or the station of this type; we are inclined to believe it is a *genus* between those of Colias and Terias, connecting this subfamily with the *Licininæ*. It may, however, be one of the sub-genera of *Colias*, in which case the genus, which it would then represent, is unknown. Fig. 1. represents the anterior wing of *Teracolus*, 2, of *Terias*, and 3, of *Colias*.

HELEONA *Fenestrata*

HELEONA fenestrata,

Australian Burnet.

Tribe Sphingides. Family Anthoceridæ. Sw. (Zyganidæ Auct.) Genus—?

Sub-generic Characters.

Anterior Wings papilioniform, i. e. the exterior margin as long, or longer, than that of the posterior; inferior wings lengthened perpendicularly, but short and rounded; Antennæ pectinate in both sexes.

Type *Phalæna militaris.* Lin. Don. *Ins. of China.* pl. 43.

Specific Character.

Wings hyaline, clouded with irregular waved bars of blue; body, thoraæ, and macular band round the margin of the inferior wings, orange.

The diurnal or Heliconean Hawk-mouths, form one of the most natural and remarkable groups among Lepedopterous insects. They fly during the heat of the day; and, (as representing in their own family the tribe of *Phalænides*) they have much of the general appearances of moths. In their slow flight, long transparent wings, and proneness to imitate death on being handled, they afford a most beautiful analogy to the Heliconian Butterflys. Both have their chief metropolis in equinoctial America, and both find their prototypes in the lovely family of *Erycinidæ.* It is really surprizing that searchers after the *natural* system, should have overlooked such a group.

Among the comparatively few genera of this division, found in India and the adjacent islands, is that now first defined: and we illustrate it by a new and very rare species, even in its own country. It was twice seen by Mr. Cunningham, on the North West Coast of Australia; once in shady woods descending to the shores of York Island, and again in nutmeg woods adjoining Brunswick Bay.

The form of the wings, which strongly resemble those of the sub-family *Papilionæ* will immediately distinguish this from all the American genera. The plant, *Pattersonia glauca,* is of a sub-genus also peculiar to New Holland.

LEPTONYX *macropus*.
Great footed Babbler.

LEPTONYX macropus

Great-footed Babbler.

Family Merulidæ. Sub-family Crateropodinæ. Genus Malacocircus, Sw. Sub-genus Leptonix. *(The Rasorial type.) Nob.*

Sub-generic Character.

Feet of extraordinary size and thickness, all the anterior toes of nearly equal length; the claws long, slender, and but slightly curved. Tail slightly rounded, of fourteen feathers. Wings very short.

Specific Character.

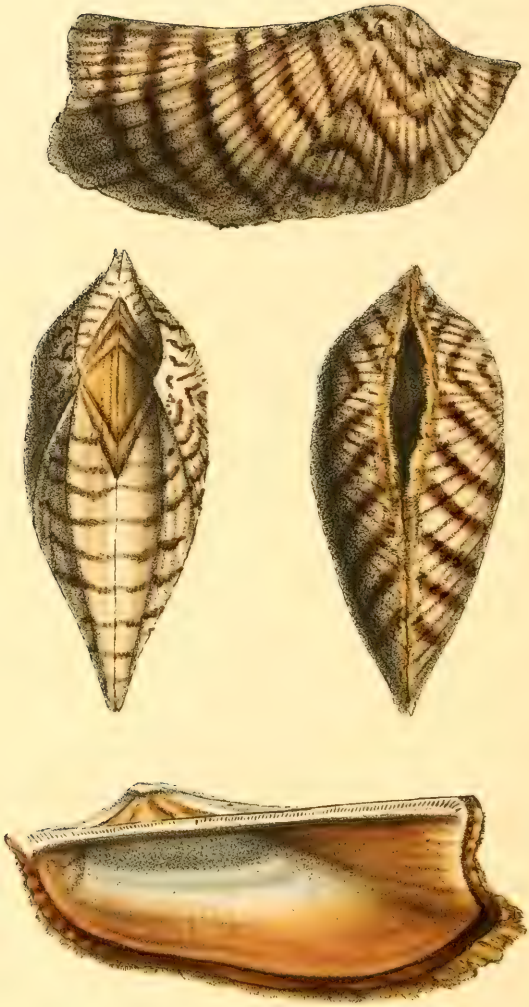
Above brown beneath whiteish, with transverse undulated lines; breast and rump, rufous brown; chin, stripe above and beneath the eye, whiteish.

For the use of this new and singularly formed bird, we are indebted to Professor Hooker, who, with his usual liberality, has recently sent for our inspection, a valuable box of Chilian birds, most of which are undescribed. They form the foundation of his son's, Mr William Hooker's collection, who has already commenced with much zeal the study of this interesting science.

All the rasorial characters are strikingly displayed in this extraordinary type; which exhibits the greatest developement of the foot of any insessorial bird yet discovered. It no doubt lives entirely upon the ground; for the feet are formed precisely on the same model as those of *Menura* and *Orthonyx*, both of which are the rasorial types of their respective circles, and are consequently representatives of *Leptonyx*: the same analogy explains its resemblance to a partridge, and more distantly to the sub-genus *Erythaca* Sw. by its rufous breast

The Indian bird erroneously called *Pitta thoracica* by M. Temminck, follows this in close affinity, and is either the Grallatorial type, or the immediate point of connection between *Malacocircus* Sw. and *Timalia* Horsf.

Total length 9 inches; bill from the gape $1\frac{1}{10}$; wings 4; tail 3; tarsus $1\frac{3}{4}$; hind toe and claw $1\frac{1}{2}$.



BYSSOARCA. *Zebra*.

BYSSOARCA Zebra.

Zebra Ark-shell.

Genus. Area. *Lin. Lam.* Sub-genus. Byssoarca. *Nob.*

Sub-Generic Character.

Animal fixed by byssiform filaments to other bodies. *Shell* transverse; umbones remote; valves gaping in the middle of the ventral margin.

Specific Character.

Margins angulated; valves marked with simple uniform and regular grooves, radiating from the umbones: shell transversely and obliquely striped with brown.

It is somewhat surprising that the sedentary type of the genus *Arca* should have been so long uncharacterized in our Conchological Systems; seeing that the other four types, viz. *Arca, Pectunculus, Cucullœa,* and *Nucula,* were defined many years ago by the celebrated Lamarck. We have consequently supplied this omission; and at the same time have selected a species hitherto, we believe, confounded with the *B. Noæ*; from which it differs in sculpture, colour, and in the umbones being less remote from each other.

The Animals of these shells affix themselves to other bodies by a particular muscle, which is protruded through the gaping part of the valves; they also adhere, when young, by the byssiform epidermes which covers the exterior: a specimen now before us, which we procured in the Bay of Naples, perfectly exemplifies this singular property. The present species is not uncommon in the West Indies, and has been sent to us from Jamaica. Like all others of this particular type it is almost constantly covered by coralline substances.

APALIS *thoracica.*
Gorget Warbler.

APALIS thoracia,

Gorget Warbler.

Family Sylviadæ. Sub-fam: Sylvianæ. Genus (?) Apalis.

Generic (?) Character.

General structue of *Prinea*, but the bill shorter, the plumage more compact, and the outer toe not connected to the middle as far as the first joint.

Specific Character.

Olive green, beneath yellowish white; breast with a black collar; three lateral tail-feathers partly white: front black.

Le Plastron Noir. *Le Vaill. Ois. d'Af.* 3 *pl.* 123. *f. l. male.* 2. *fem.*
Motacilla thoracia. *Nat. Miss.* 22. *pl.* 969.

This is one of the pretty warblers of Southern Africa, discovered by Le Vaillant: it is very common and widely distributed in the interior, but rare near the Cape. Le Vaillant mentions having found a young bird of the Criard Cuckoo, in the pigmy nest of this little species, which had already grown to the size of a thrush: it not only filled the nest, but actually enlarged and destroyed its original shape. Yet still did the foster parents, by a most extraordinary instinct, go on feeding this overgrown parasite, although it was even then more than double the size of themselves. Our figure is of the natural size of the male; the female is without the black collar. Specimens are in Mr. Burchell's Museum and in our own.

That this bird is of a tenuirostral type, is almost certain; seeing that it is an obvious representation of *Motacilla*, *Pachycephala*, *Tamatia*, *Trichas*, *Charadrius*, and many other collared groups: but whether it forms part of the genus *Prinea*, or represents the tenuirostral genus between that and *Culicivora*, is very uncertain. We suspect that this latter station is filled by the Taylor-Warblers of India, not one of which is to be found in our public Museums.

CENTIA *dissimilis*

CLYTIA dissimiles,

Idea-likeness Butterfly.

Family Papilionidæ. Sub-fam. Papilionæ. Genus Clytia.

Generic Character.

Wings rounded, spotted. Anterior broad, ample, the posterior and the external margins of equal length: posterior slightly undulated at the margin, but destitute of tails. Pupa braced, with the head upwards.

Types. Pap. Clytia, dissimiles. *L.* Pap. Macarius. *Godart.* P. Panope *Cr.*

Specific Character.

Wings black, the interstices of the nerves pale fulvous white, broken into numerous stripes and spots, inferior wings with a marginal row of orange spots, surmounted by pale lunules, on a black border.

Papilio dissimilis Linn. *Fab. Ent. Syst.* 3. 1. *p.* 38. *Ency. Meth.* 1. *p.* 76. *Cramer. Pl.* 82. *c. d. Rœmer. Gen. Ins. pl*, 18. *f.* 6.

We have never seen specimens of this Butterfly from any other country than China, although it appears that General Hardwicke has met with it in British India, and has communicated a valuable drawing of the larva and pupa to Dr. Horsfield, in whose interesting work it is engraved. To that plate we must refer the entomologist who wishes to understand the previous states of this insect; while its general aspect at once intimates its resemblance or analogy to the Sub-genus *Idea* F, and consequently points it out as the generic type of that form in the circle of the *Papilionæ.* According to these views, *Clytia* is united to *Amphrysius*, by the sub-genus *Epius;* (Pap. Epius. Auct.) and at the same time forms the generic passage to the *Pieridæ.* Sw. For want of a better term, we must call this the *Rasorial* type, as it corresponds to that Ornithological group.

The aberrant group of the Sub-family *Papilionæ* appear to be the genera *Leilus*, *Sw.* (*Uranea* Lat.) *Antimachus.* Sw. and *Clytia* Sw. the two typical genera being *Papilio* and *Amphrisius*, Sw.

THOAS *Lysithous*. *Sw.*

THOAS Lysithous,
Lysithous Butterfly.

Sub-fam. Papilionæ. Genus, Papilio. *Sw.* Sub-genus Thoas. *Nob.*

Sub-Generic Character.

Posterior wings terminating in spatulate or obtuse tails; the margins deeply scoloped; *Larva* smooth; *Pupa* braced, with the head directed *upwards.*

Typical Sections.

1. Wings with macular yellow bands.	Pap. Thoas. *Auct.*
2. Wings with entire white bands, the posterior spotted with crimson.	Agavius.
3. Wings black, varied with emerald green bands or dots; tails short, obtuse.	Paris.
4. Tails obsolete.	Evander.
5. Tails short, acute.	Androgeus.

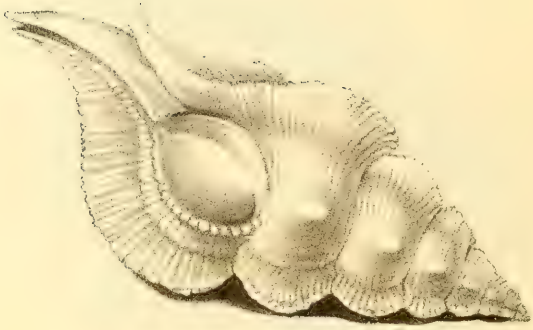
Specific Character.

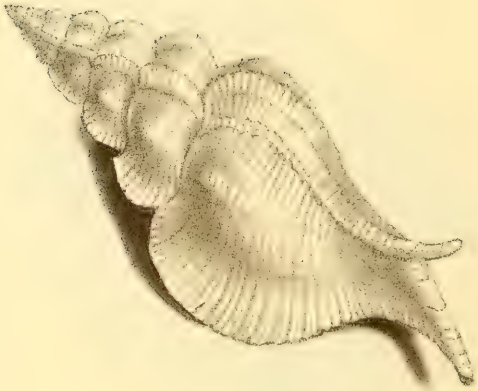
Wings uniform black; anterior with a white band; posterior dentated and tailed, margined by red lunules; the disk white, bordered behind by 4—5 *red spots.*

Papilio Lisithous. *Ency. Meth.* 1. *p.* 73, *no.* 136.

We discovered this imposing species in the interior of Brazil, in 1814, long before it was made known in France by the specific name we have adopted. It is confined to the southern provinces; for we never met with it north of the Rio St. Francesco. Although greatly resembling *Thoas Agavus* and *Harrisianus*, (Z. Ill. 1 Series, pl. 109) it is at once distinguished by the longer and more acute dentations of the inferior wings. The under side shews no material difference from the upper. To the second type of this subgenus belongs also *Ascarius* L. *Polybius* Sw. (Z. I. 1 Series. pl. 137), and *Tros.* Fab. while *Dardanus* F. probably connects this American group with the third or *Paris* type, whose geographic range is confined to Asia.

In the fourth form (*Evander*), representing the Heliconian type, the tails are obsolete, but they begin to appear again in the fifth, and thus complete the circle of the sub-genus *Thoas.* By studying this natural series, the Entomologist will discover a most beautiful set of analogies between the genera *Papilio* and *Amphrisius.*





MUREX (*Pteronotus*) *pinnatus*.

MUREX (*Pteronotus,*) pinnatus.
Finned Murex.

Family Buccinidæ. Sub-fam. Muricinæ. *Sw.* Genus Murex. *Lam.* Sub-genus Pteronotus. Sw.

SUB-GENERIC CHARACTER.

See Pl. 100.

SPECIFIC CHARACTER.

Shell snowy white, with three twisted varices, which are surmounted by a thin, dilated fringe, having the margins undulated; channel curved; outer lip crenate.

Murex pinnatus. *Swains. Bligh. Cat. App. p.* 17.
Martini. Conch. 3 *pl. III. fig.* 1036—1037. (*bad.*)

THIS highly elegant and delicate species was first described by us in the *Catalogue of the Bligh Collection*, at the sale of which a specimen produced five pounds. Latterly, however, the species has become more frequent: the figures are taken from a fine individual in our Museum, procured fron China. The pure white of the surface is relieved by a slight iredescent or pearly gloss, similar to that on the scales of many fish: but which is probably concealed, in a state of nature, by a thick and soft epidermis, similar to that of *Triton corrugatum*, Lam.

The structure of this sub-genus is further remarkable for the prolongation of the basal end of the principal varex on the body whorl, which, in nearly all the species, is so prominent, as to give the shell an appearance of having two channels. It is remarkable that this horn-like process occurs in that part of the shell which is immediately above the head of the animal: so that even in this genus of Mollusca we see a manifestation of that principle of the natural system, by which one of the abberant types of nearly all animals have crests, horns, or similar protuberances on or near the head.

1

2

2

2

1

ACHATINELLA. Pl. 3.

1. rosea 2. pulcherrima

ACHATINELLA rosea,

Rosey, reversed Achatinella.

SUB-GENERIC CHARACTER.

See pl. 99 and 108.

SPECIFIC (?) CHARACTER.

Shell reversed, ovate-oblong, sub-ventricose, pale rose colour, with obsolete white bands.

Ach. bulimoïdes (var. rosea) *Swains. in Brand's Journal Cap.* 1828, *p.* 85.

THE figures on this plate complete the illustration of our monograph of this pretty and interesting group of shells. At present, we feel undecided whether this is a species, or a variety of *A. bulimoïdes*, from which it differs in being reversed, in having the marginal groove very distinct, instead of scarcely perceptible, and in colour. We possess only two specimens which came, with all the others, from the Pacific Islands.

ACHATINELLA pulcherrima,

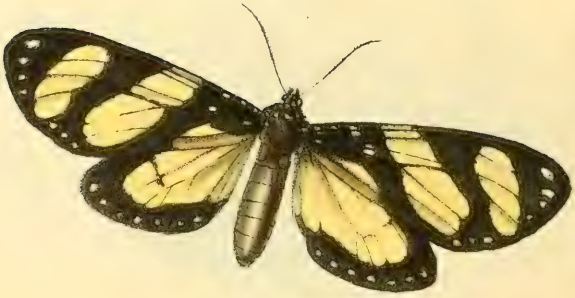
Fig. 2.

Shell ovate-oblong. sub-cylindrical, white or yellow, with broad bands of chesnut; margin of the lip, brown.

Ach. pulcherrima. *Sw. ut. sup. p.* 86.

THIS species is the most lengthened in form, and the most beautiful in colour of all those we have yet seen: some individuals, however, are more ventricose than others and the colours are no less variable. The ground colour is usually of a rich and deep chesnut, with from one to three bands of orange yellow, fulvous, or white; we have figured a further variety of a rich golden yellow with a chesnut line only at its suture: but in all these the marginal groove is very close and distinct.

1



2

ANTHOMYZA *Tirsina*. 2 *heliconides*.

ANTHOMYZA Tiresia.
Three banded Burnet.

Tribe, Sphingides. Family, Anthoceridæ. *Sw.* Genus——? Sub-genus.

SUB-GENERIC CHARACTER.

Anterior wings with the outer or exterior margin much shorter than the posterior; inferior wings lengthened horizontally, but short and rounded. Antennæ slightly pectinated in one sex only: palpi pointing vertically. Inhabits Tropical America only. *Nob*,

SPECIFIC CHARACTER.

Large: anterior wings black, with one basal, and two transverse, opaque, deep yellow bands; posterior yellow, with a broad black border; margins of both wings dotted with white.

P. Tiresia. *Cramer. Pl.* 85. *f. B.*

We now, for the first time, detach from the moth-like, or diurnal Sphinxes, all those large and imposing species which are found in Tropical America; and by comparing their characters with those of the Oriental group *Helonia*, it will be seen how strikingly they differ. During our researches in Brazil, the chief metropolis of this group, great attention was paid to these insects, of which we have a most extensive series. They fly slowly and heavily during the middle of the day, and on the least touch counterfeit death. Most of the species, when handled, discharge from their body a brown liquor, like their prototypes the *Heliconidæ*.

ANTHOMYZA heliconides,
Heliconian Burnet.

Anterior wings black, with one basal and two transverse hyaline yellowish white bands: posterior yellowish white, with a broad black border, margins of both wings dotted with white.

If we were not in possession of both sexes of the foregoing species, we should have suspected that *this* was a mere sexual difference; but the spots are transparent. The remarkable resemblance between this and some of the Heliconian butterflies, particularly *Linus* and *Psidii*, (Cr pl. 257.) is truly astonishing. Nature could not have stamped their analogy stronger.

LEILUS *Salmanensis*. *Sw.*

LEILUS Surinamensis.
Surinam Emerald Butterfly,

Family, Papilionidæ. Sub-fam Papilionæ. Genus, Leilus. Sw.
(Fissirostral or Hesperian type) Sub-genus. Leilus *proper*. Sw.

SYNOPSIS OF THE SUB-GENERA.

I. TYPICAL. Antennæ filiform, thickened in the middle; posterior wings with long pointed tails. LEILUS.

II. SUB-TYPICAL. Antennæ as in the last, but arcuated near the tip. Tails of the posterior wings short and obtuse. ORONTES.

III. ABERRANT. Antennæ clavate; front very hairy; tails none. RIPHEUS.

Antennæ clavate; wings hyaline; tails very long. LEPTOCIRCUS.

SPECIFIC CHARACTER.

Wings black, varied with lines and bands of emerald-blue green: posterior tailed; the green spots round the margin running into each other; tails nearly white.

Papilio Leilus. *Linn. Sys. Nat.* 2. 750. *Fab. Ent. Sys.* 3. p 21. *Merian. Surin. pl.* 29.

Urania Leilus. *Fab. Syst. Gloss.*

THE Butterflys composing this remarkable genus are perhaps the most splendid insects in creation. No art can effectually represent the changeable and resplendent green which relieves the velvet black of the wings, and which varies with every change of light. The typical species are found in Tropical America, where they fly with amazing rapidity, and perform, like their prototypes the Swallows, annual migrations. When at rest, the anterior wings are flat or horizontal, but only slightly spread. The present species appears confined to Surinam.

Modern systematists have been peculiarly unfortunate in the location and construction of this group; while the name of *Urania*, bestowed upon it by Fabricius, has long been appropriated to a genus of plants. Linnæus, more correctly, placed it with the genuine *Papiliones;* a station which is confirmed by the details of its structure: the anterior feet, like those of *Leptocircus*, figured at pl. 106, being provided with that short spiney process, which is a peculiar distinction of this sub-family. The analogies which result from this location of *Leilus* are beautiful, and almost interminable. It is the representation of the *Noctuidæ* and of the *Hesperidæ* in its own circle; and of the fissirostral tribe of birds; all these being modifications of the natatorial type of the VERTEBRATA.

LEILA *Brasiliensis* Sw

LEILUS Braziliensis.

Brazilian Emerald Butterfly.

Sub-Generic Character.

Wings when at rest, horizontal, slightly expanded; posterior furnished with acute tails. Palpi short, porrect; the last joint nearly naked, projecting beyond the head, but shorter than the second joint. *Tibiæ* of the anterior feet, spined in the middle: claws very small. *Antennæ* filiform, thickened in the middle; the tips bending outwards, but not uncinate. *Sw.*

Specific Character.

Wings black, varied with lines and bands of golden green: posterior wings tailed, the green spots round the margin divided and insulated; the tails black, with a narrow white edge.

In Mus. Britt. Nost.

This species, hitherto confounded with that peculiar to Surinam, is found only in Brazil; but its precise geographic range, in that vast empire, has not been correctly ascertained. We had the pleasure of capturing several specimens in Lat. 8, 24, S. in the vicinity of Pernambuco, where great numbers appear during the early weeks of May, and again in June.

On refering to our journals, we find the following note. "*Papilio Leilus.*—Great numbers of this insect were flying during the whole of the morning, past *Aqua Fria* (Pernambuco), in a direction from north to south: not one deviated from this course, notwithstanding the flowers which were growing around: they flew against the wind, which blew rather strong, and near the ground, but mounted over every tree or other high object which lay in their course; yet their flight was so rapid, that I could not capture a single specimen. They went singly, and near fifty or sixty must have passed the spot opposite the window, before mid-day: they continued to pass for three or four days in this manner. 12th June, 1817." Now it is clear that these insects could not have come from so far north as Surinam, where only the other species is found; and they certainly do not migrate to the more southern latitude of Rio de Janeiro. As we have never seen this species in the London Cabinets, we have deposited a specimen in the British Museum, that our entomologists may become acquainted with the structure of the feet.

MALACOCIRCUS *Striatus.*
Striped Babbler.

MALACOCIRCUS striatus.

Striated Babbler.

Family Merulidæ. Sub-fam. Crateropodinæ. Sw. *North. Zool.* 2, *p.* 156. Genus Malacocircus.

GENERIC CHARACTER.

Bill rasorial, i. e. short, high at the base, conspicuously arched from the front, where the feathers are divided; tip obsoletely notched. Tarsi thick, moderate; the scales entire. Wings and tail rounded.

SUB-GENERA. Megalurus. Pomatorhinus. *Horsf.* Malacocircus. Leptonyx. *Sw.*

SPECIFIC CHARACTER.

Entirely light brown: wings and tail darker, the quills marked by transverse dark lines: bill and feet yellow: margin of the quills changeable greyish white.

Gracula striata. *Mus. Paris.*

THE Babblers, or long legged Thrushes, (forming the sub-family *Crateropodinæ*, Sw.) are almost exclusively confined to the warmer latitudes of the old world; extending to the north as far as Egypt, and to the south over the greatest part of Australia. Like all birds which belong to the natatorial type, the majority of the species live in the vicinity of water. Their voice, like that of *Donacobius*, Sw. is particularly discordant, and many of them appear to be gregarious. The present species we received from Ceylon, but without any notice of its habits: another specimen is in the Paris Museum, under the manuscript name of *Gracula striata*, from the circumstance of the scapular quills, and also the tail feathers, being marked with transverse lines of a darker brown, varying in intensity according to the rays of light.

We have not yet sufficiently worked out this intricate and little known group: the very existence of which was first announced in North. Zool. 2, p. 156. According to our present views, the genera yet characterized appear to be *Crateropus*, *Malacocircus*, *Pellornium*, and *Timalia*. To *Crateropus*, we at present refer the sub-genera *Grallina*, Vieil, *Cinclosoma*, H. & V. and *Aipunemia*, Sw.; while those of *Malacocircus* are probably *Megalurus*, H. *Pomatorhinus*, H. and *Leptonyx*, Sw. Under the genus *Timalia*, we place *Psophodes* and *Dasyornis*, H. & V.

MITREOLA.

1 monodonta. 2. torebellum.
3 Mitra acuminata.

MITREOLA monodonta,
The Volute Mitres.

Family Volutidæ. Sub-family Mitranæ. Genus Mitreola. *Sw.*

GENERIC CHARACTER.

Shell fusiform, smooth; the middle plaits of the pillar largest apex of the spire generally papillary.

SPECIFIC CHARACTER.

Shell ovate, acute, smooth; spire slightly striated, the tip papillary; outer lip within, gibbous.

Mitra monodonta. *Lam. Syst.* 7, *p.* 324.

We feel much obliged to Mr. G. B. Sowerby for calling our attention to the remarkable construction of this Volute Mitre, of which we had not then seen a specimen. We view it as supplying that link of connection between the *Volutinæ* and the *Mitranæ*, the Volute and the Mitre shells, which we had long been in search of. Of the genus, however, we know as yet but of two species, represented on the plate somewhat larger than their natural size. We have also added a figure of our *Mitra acuminata*, to shew how beautifully *Mitreola* is represented by the fourth type of the genus *Mitra*, as now restricted, to which type (represented by *M. Zebra*), *acuminata* also belongs: both, as prototypes of the *Strombidæ*, have the outer lip gibbous near the top; but the plaits of the pillar are totally different, while the spire of one is acute, and of the other papillary. *M. monodonta* is a Grignon fossil: some specimens are so well preserved, that the colours may be traced in the appearance of zebra-like stripes: thus strongly corroborating our views on its true analogies.

MITRA terebellum.

Shell fusiform, turrited, smooth, base striated; channel sub-entire.

Mitra terebellum. *Lam. Sys.* 7, 325. *Ency. Meth. pl.* 392, *a, b, c, d?*

Of this Grignon fossil, we have but one specimen: it agrees with Lamarck's description, but not with the figure he quotes; and it may possibly be a distinct species between his *M. plicatella* and *terebellum*. The plaits are like those of *M. monodonta*; but the tip of the spire is acute, and slightly plaited.

LEILUS *Occidentalis* Sw.

LEILUS Occidentalis,
West India Emerald-Butterfly.

SPECIFIC CHARACTER.

Posterior wings with a flame-coloured, irregularly indented, marginal band; tails black, with emerald green spots.

Papilio Sloaneus. *Cramer. pl.* 85. *e. f. vol.* 1. *p.* 134.
Papilio Leilus. var. *Fab. Ent. Syst.* 3. 1. 22.

SPECIMENS of this rare and splendid species, sent to our museum from the island of Jamaica, enable us to complete the illustration of the only three American species of this type hitherto discovered. It is in all probability the same as that figured by Cramer; particularly as his specimens came from the same locality. Even a superficial comparison of this figure with those on our two last plates, will shew the error of Fabricius and others, in classing them all under the same name. We have represented the species in that attitude which is assumed by *L. Braziliensis*, when at rest; the wings of which species are sometimes *less* but never *more* expanded: the fruit, upon which the insect is reposing, is the common West India *Banana*, shewing its natural size.

In drawing the attention of Entomologists to the anatomical details of this typical example of the genus *Leilus*, it will be readily perceived that the obscurity which has involved its natural affinities, has entirely arisen from ignorance of its structure. At a time when minute and obscure Coleoptera are submitted to the most delicate dissection, under powerful magnifiers, the LEPIDOPTERA, not only the most striking and splendid of all insects, *but the pre-eminent type of the* ANNULOSA, have been comparatively neglected. We cannot otherwise account for this, but by remembering that the influence of fashion is universal, and that she is always followed by the majority. This exclusive devotion however, to one order, is highly detrimental to the study of the natural system; or with so many profound Entomologists who have gone before us, it would not have been left for us to make known the fact, that the sub-family *Papilionæ*, represents the sub-family *Harpalinæ*, (Harpalidæ, *Auct.*) And that this analogy is not only demonstrable by the peculiar construction of their *tibiæ*, but by the parallel relations and by the circular affinities of the COLEOPTERA and the LEPIDOPTERA.

LEILUS Orientalis.

Oriental Emerald Butterfly.

SPECIFIC CHARACTER.

Posterior wings six tailed; anal angle with a large flame-coloured space, varied with black spots; tails unequal, whiteish.

Papilio Rhipheus. *Cramer, Vol.* 2, *page* 193, *pl.* 385, *fig. A. B.*

THAT the natural affinities of this superb and highly interesting group of insects should be no longer a matter of doubt, we are induced to deviate, for the first time, from our usual practice. On this and the next plate we have copied two figures of insects which we have never seen, for the purpose of bringing them immediately before the eye of the entomologist, and of clearing up some remarkable facts concerning them.

The first of these is taken from Cramer, who calls it *Pap. Rhipheus*, from an unaccountable idea that it was the same species as one figured by Drury, under that name. He imagines that this latter figure was made from a mutilated specimen, in which the tails had been broken off, and that *his*, consequently, represented the insect in its perfect state. Every succeeding writer, so far as we can discover, has taken up this idea, without the precaution of investigating its correctness. Now it follows that if the two species were the same, the posterior wings of *Cramer's*, would be spotted like those of *Drury's*, yet they are essentially different: a piece of paper, put over to hide the tails in our present figure, which may then be compared with the next, will at once explain our meaning: but setting this aside, Cramer expressly asserts that his insect has the Antennæ "*sans boutons*, and *comme filiformes*, and very justly compares it with our *Leilus Surinamensis*, "*mas plus encore*," with *Pap. Orontes*, L (*Orontes Noctuïdes*, Sw.) the immediate type to which it leads.

How totally inapplicable this account is to Drury's insect, will be presently shewn. Cramer has most correctly given the immediate affinities of this insect. We have no space to state our reasons for considering it, at present, as a true *Leilus*; although with six tails, instead of *two*. It may *possibly*, however, be the fifth, or natatorial type, which in our synopsis of the genus at Pl. 125, we have not ventured to indicate. We have never seen, or even heard of a specimen in modern cabinets; that figured by Cramer, was found at Chandernagor, in Bengal, and was in the rich collection of M. Gigot d'Orcy.

RHIPHEUS *Dasycephalus. Sw.*

RHIPHEUS, dasycephalus.
Round-winged Emerald Butterfly

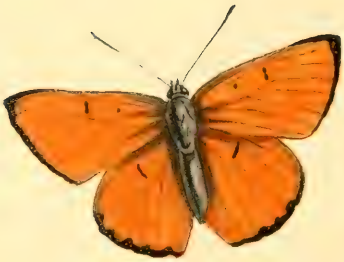
SPECIFIC CHARACTER.

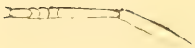
Wings black, varied with numerous irregular lines of emerald green; posterior with the internal and anal angle, deep blood-red, shining with gold and spotted with black.

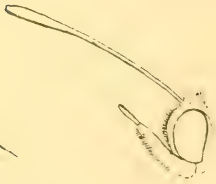
Papilio Rhipheus. Drury. Ins. 2, p. 40, pl. 23, 1. 2.

IF the imagination was taxed to invent, or to concentrate into one figure all that was splendid, lovely, or rare in the insect world, Nature would far exceed the poor invention of man by the production of this incomparably splendid creature; its rarity also is so great, that but one specimen has ever been seen: this was brought from China, and in 1773, belonged to a Captain May, of Hammersmith: with whom it was seen by Drury, and drawn by Harris. It is not however, on this account only that we have been induced to copy this figure, but because its illustration will clear up one of the most intricate and perplexing questions, that has hitherto impeded the natural arrangement of the Linnæn *Papiliones*, and even of the whole order of Lepidoptera.

The error of Cramer, regarding *Rhipheus* has already been rectified. It will now be demonstrated that not only are the two insects distinct as *species*, but that they actually belong to different *genera*. Cramer's being a *Urania* of Fabricius and Latrielle, while Drury's is a *Papilio* of the same authors. This is proved by the figures; and confirmed by the following words of Drury, "*The antennæ are black, and knobbed at their extremities*," in other words, clavate; while the palpi, as expressed in the figure, are so small as not to project beyond the head, where they lie hid in the frontal hairs: this also being a typical distinction of the Latrellian *Papiliones*. The figures in Drury's work were all drawn and engraved by Moses Harris, well known as one of the most accurate artists that ever lived: as a remarkable proof of this, we find that he has not failed to delineate that peculiar nuration of the anterior wings, which belongs only to the types of *Leilus*. A closer affinity therefore between *Papilio* and *Leilus* cannot possibly be imagined: while its remarkably hairy front, points out its analogy, as an aberrant type in its own genus, to *Chlorisses*, among insects, and *Dasycephala* among birds. So true it is that the natural system "illuminates with a flood of light" every supposed anomaly, and reconciles facts apparently the most inexplicable.







LYCÆNA *Dispar*.

LYCÆNA dispar.

The Large British Copper.

Family Erycinidæ. Sub-family Theclinæ. Sw. Genus Polyommatus.

Generic Character.

Wings (typically) obtuse, rounded; anterior having the external margin shorter than the posterior: posterior wings entire or nearly so: destitute both of filiform caudal appendages, and of metallic anal spots. *Nob.*

Sub-Generic Character,

Posterior wings obsoletely dentated, particularly at the anal angle: club of the antennæ short, spatulate; palpi hairy, the last joint lengthened, acute, naked, obliquely vertical. *Type.* L. Phlæas.

Specific Character.

Wings coppery: the male with two discoid black dots on the anterior, and one on the posterior wings: club of the antennæ elongated and fusiform. (Aberrant.)

Papilio Hippothoë. Lewen's Pap. pl. 40.
Pap. dispar. Haworth. Lep. Brit. p. 40. Stevens. Brit. Ent. I. p. 82. Pl. 3

As considerable misconception appears to exist regarding the type of the tenuirostral or vermiform family of the Diurnal Lepidoptera, we shall endeavour to illustrate this subject. Our concluding number is accordingly devoted to the genus *Polyommatus* of Latrielle, and its subordinate types or sub-genera. These compose, what we have elsewhere defined, a natural and perfect group; *(North. Zool.* 2, 288) inasmuch as it has been tested by the analogies, and conformed by the representations, which it bears to innumerable others, both in the Annulose and vertebrated circles. According to this analysis, both *Lycæna* and *Polyommatus*, strictly so termed, instead of being types either of families or sub-families, are of one and the same genus: which genus, moreover, is but the portion of the aberrant group of the *Theclinæ.* The typical forms of the genus *Erycina*, exclusively confined to Tropical America, constitute, in fact, the pre-eminent perfection of the family in question.

As *Lycæna* represents the *Nymphalidæ*, or sub-typical family of the Diurnal Butterflys, so is it the sub-typical form of the genus *Polyommatus.* Its geographic range is wide, being extended to the temperate latitudes of both hemispheres. The largest British species is that now figured, from the identical specimens mentioned by Lewin.

POLYOMMATUS *Cassius*.

POYLOMMATUS Cassius.

Brazilian Blue.

Family Erycinidæ. Sub-family Theclinæ. Genus Polyommatus.
(The typical sub-genus.)

SUB-GENERIC CHARACTER.

Wings entire, obtuse; the posterior rounded, particularly at the anal angle. Palpi covered and fringed with long hair; the last joint distinct and nearly naked. Antennæ with a lengthened, fusiform, spatulate club. Colour blue, beneath ocellated.

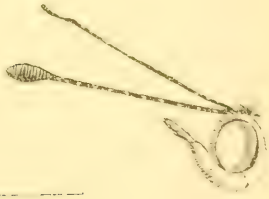
SPECIFIC CHARACTER.

Male: wings sub-diaphanous, blue, immaculate; whitish near the anal angle. Female: the disk of all white, with black spots and borders. In both sexes, beneath white, with blackish dots: those on the anterior wings transverse and confluent.

Pap. Cassius. (the female) *Cramer, pl.* 23, *fig. c. d.*

WE have elsewhere pointed out, as one of the peculiar distinctions of forms and groups pre-eminently typical, that their geographic distribution is invariably wide, and generally universal; and that this is one of the reasons why certain forms are found both in Europe, America, India, and Australia. This was said of Birds, and the remark is even more applicable when we look to insects. We accordingly find, that the typical species of the genus now under consideration, not only spread themselves over all Europe and Africa, but extend to the Indian islands on one side, and over the whole of America on the other, without offering more than a sectional variation of character. It is uncertain, however, whether any species occur in Australia; for the European type seems to be represented there by the sub-genus *Erina*. The genus, *collectively*, is a rasorial type, representing the family *Satyridæ* among the *Papiliones*,—*Parnassius* among the *Papilionidæ*,—and the *Pavonidæ* among Birds.

Pol. Cassius is one of the most common species of Brazil, where we found it frequenting similar situations, and possessing the same habits, as the ordinary Blues of England The analysis bestowed upon this group, convinces us that *Pithecops, H.* is but a section of this sub-genus. The upper figure represents the female, the lower the female: both are enlarged. The connecting species between *Polyommatus* and *Lycæna* are *Helle*. Hub. *Lamatia*, and *Boetica*.



PIERIS *[illegible]*

ERINA pulchella.

Buff-spotted Blue.

Family, Fricinidæ. Sub-fam., Theclinæ. *Sw.* Genus, Polyommatus. *Lat.* Sub-genus, Erina. *Sw.*

Sub-Generic Character.

Wings obtuse, very entire: palpi covered only with compact scales, the last joint lengthened, slender, and very naked. Club of the antennæ short, broad, and spatulate. Colour, dark blue, spotted beneath.

Typical. Hesp. Erinus. *Fab. Aberrant.* Lycæna ignita. *Leach.*

Specific Character.

Wings above brown, glossed with blue; anterior with a discoid fulvous spot; beneath white: posterior pair with three black dots in the middle.

Mus. Brit. Nost.

The passage from *Polyommatus* to the type now before us, is distinctly marked by the section (for under that rank we may still retain it), named *Pithecops*; the palpi of these latter being both hairy, like the typical *Polyommatus*, and squamose, as in *Erina*: the posterior wings of both are also much of the same shape. By these blended characters Nature gently glides into the form now under consideration, which is the satyrian or *rasorial* type of the genus; representing the *Satyridæ*, the *Hipparchianæ*, &c. and which supplies the place of *Polyommatus*, strictly so termed, on the Australian continent. We have already before us six species from that country; five of which are typical, but the sixth, the *L. ignita* of our friend Dr. Leach (*Zool. Miss.* 1, *pl.* 60), demands particular attention. We have elsewhere shewn that all aberrant forms unite into a circle of their own. Now as *Erina*, *Lucia*, and *Naïs*, are the aberrant forms of the genus *Polyommatus*, so there should be species either in the first or the last,—that is, in *Erina* or *Naïs*, which would exemplify this theory in the present instance. We accordingly find it demonstrated by *Erina ignita*; for that insect, although essentially belonging to this type, in the characters of the *palpi* and *antennæ*, nevertheless assumes one of the great distinctions of *Naïs*.—*The wings of the two sexes being different*: the posterior pair in the female are dentated, while those of the male are completely entire: so that the first might pass for a *Naïs*, and the second for an *Erina*; both sexes further shew the union of these two types, by having the under surface of their wings ornamented, as in *Naïs*, with silvery spots. Our figures, by the scale, are somewhat enlarged. We have sent a specimen of *E. pulchella* to the British Museum for general reference.

LUCIA *limbaria*

LUCIA limbaria.

Brown-winged Blue.

Sub-fam. Theclinæ. Genus Polyommatus. *at*. Sub-genus Lucia. *Sw.*

SUB-GENERIC CHARACTER.

Wings horizontally lengthened, entire: palpi very slender, ciliate with long hairs, the last joint very minute, scarcely distinguishable. Antennæ with a lengthened club, either cylindrical or compressed. Colours obscure, moth-like.

SPECIFIC CHARACTER.

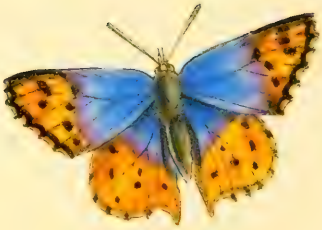
Wings above brown, disk of the anterior fulvous, with two brown spots above, and three beneath, encircled with white: posterior beneath varied with grey and white, with a central band of square brown spots.

Hesp. Lucanus? *Fab. Ent. Syst.* 3, 1, *p.* 322. *Donovan's Ind. Ins. pl.* 43, *f.* 4?

Mus. Nost.

THIS, which appears the most aberrant type of the genus, immediately reminds the student of a dark coloured *Erycina* or a *Phalæna*, both of which families, as being the Heliconian or Erycinian type of *Polyommatus*, it truly represents. It is at once known from *Erina*, by its very peculiar palpi, and by its more lengthened wings. The antennæ of three species now before us, present a remarkable difference. In two of these, the club is compressed and spatulate, like that of *Erina*; but in the third, here figured, it has the cylindrical form belonging to *Naïs*. Which of these forms is typical, must at present, be undecided; but there cannot be a stranger link of connection between *Lucia* and *Naïs*, than the fact of this species borrowing, as it were, the cylindrical club of the latter. Without such a link, in short, the series would be imperfect.

As we cannot satisfactorily determine whether the types here figured of *Lucia* and *Erina* are described in books, we have been compelled to regard them as unnamed. This, and the two other species we possess, are all from Australia. On bringing the genus *Polyommatus* to analogical tests, the only demonstration of a natural group, we find the subgenera representing the families of the Diurnal Lepidoptera, in the following manner:—1. TYPICAL, Polyommatus, *Papilionidæ*.—2. SUB-TYPICAL, Lycæna, *Nymphalidæ*.—3. ABERRANT, Naïs-*Hesperidæ*, Lucia-*Erycidinæ*, and Erina-*Satyridæ*.



NAÏS *splendens.*

NAÏS splendens.

Blue-shouldered Copper.

Sub-fam. Theclinæ. Genus Polyommatus. Sub-genus Naïs. *Sw.*

SUB-GENERIC CHARACTER.

Wings sub-angulated; posterior dentated, particularly at the anal angle. Copper coloured above, with silvery spots beneath. Antennæ cylindrical, thickening from the base: the tip truncate.

SPECIFIC CHARACTER.

Wings above coppery, with black dots, their basal half-shining blue; beneath fulvous; the posterior varied with ferruginous, and marked by silvery spots.

Pap. Naïs. *Cramer, pl.* 57, *fig.* D. E.

In every natural group of the diurnal Lepidoptera which we have analysed, (and the number is somewhat considerable,) there is always one in which the posterior wings are more than usually tailed; and this seems to be such a prevalent form throughout the Vertebrata and the Annulosa, that we believe it is universal: in other words, that it is one of the PRIMARY TYPES of Nature. We have consequently termed it the *natatorial*, since it represents that order of birds, as the Swallow-tailed *Papiliones* typify the Swallows. That we should find this form in a group where the chief character is the roundness and the integrity of the wings, is certainly astonishing; but it shews that the laws of Nature are as simple, as they are universal. The absolute union of this sub-genus with *Lycæna*, with which we commenced the circle, is palpable to the meanest capacity. All the species we possess, are from Africa and India. As they represent the *Argynninæ*, we accordingly find them ornamented with silver spots. The species now figured, are probably male and female, and were received from Africa.

We have now given the natural types of an Entomological genus; the only one that has been attempted, since the demonstration of *Phanæus* and *Scarabæus*. These are but three genera, out of many thousands, which at present have any other foundation, strictly speaking, than mere opinion. But the great principles of variation are now discovered, and we must hope that those naturalists of a higher order, who join acknowledged talent to matured experience, will follow up the subject.

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